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(54) Title: REELIN DEFICIENCY OR DYSFUNCTION AND METHODS RELATED THERETO

(57) Abstract: A method of measuring Reelin as a biomarker, to non-destructively assess or predict DHA levels in the brain and in other, currently inaccessible or difficult-to-access, key components of the central nervous system (CNS) is described. Also described is a method to prevent, delay the onset of, or treat Reelin deficiency or dysfunction and/or a disease or condition associated with Reelin deficiency or dysfunction, comprising administering to a patient diagnosed with or suspected of having a Reelin deficiency or dysfunction an amount of a PUFA, and particularly an omega-3 PUFA, and more particularly, docosahexaenoic acid (DHA) or a precursor or source thereof, to compensate for the effects of Reelin deficiency or dysfunction in the patient. Also described is a method to prevent or reduce development defects or disorders associated with Reelin dysfunction or deficiency through the supplemental use of polyunsaturated fatty acids (PUFAs- unsaturated fatty acids having two or more double bonds), and particularly highly unsaturated fatty acids (HUFAs- unsaturated fatty acids having three or more double bonds), and more particularly a HUFA selected from arachidonic acid (ARA), eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA) and docosapentaenoic acid (DPA), and even more particularly omega-3 HUFAs, and more particularly DHA, to: compensate for reduced fatty acid binding protein or function thereof in the patient; compensate for reduced brain lipid binding protein or function thereof in the patient; improve the activity of fatty acid binding proteins in the patient; increase the expression of brain lipid binding proteins (BLBPs) in the patient; improve at least one parameter of the mechanism of action of brain lipid binding proteins in the patient; overcome a deficiency of DHA in central nervous system (CNS) structures and improve the resulting function thereof; increase the incorporation of functional DHA and other PUFAs into the phospholipid membranes of glial cells and neurons in the patient; increase the level of Reelin and/or improve the activity of Reelin in the patient; and/or improve at least one symptom of a disease or condition associated with Reelin deficiency or dysfunction.

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